Salmon and Steelhead
Habitat Limiting Factors Report

for the

SAN JUAN ISLANDS
(Water Resource Inventory Area 2)

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primum non noceo

the Latin phrase translated as "*do no further harm*"

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Members of the San Juan Island Technical Advisory Group include: Laura Arnold, (Director, San Juan County Planning Department), Stephanie Buffum (Executive Director, Friends of the San Juans), Dr. David Hoopes (San Juan Conservation District), Dr. Lawrence Moulton (Consultant), Mr. Steve Seymour (Washington Department of Fish and Wildlife).

Reviewers

This report would not have been possible without the support and cooperation of many reviewers. In addition to the authors listed above, other reviewers of various chapters are listed below.

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INTRODUCTION

The San Juan Islands have long been recognized for their natural beauty, mild climate, abundant and diverse living resources, and a "quality of life" unlike regions found elsewhere. These qualities have attracted increasing numbers of people to this region to live and work, and for recreation. The increasing human population has led to increased demands for housing, infrastructure, and recreational opportunities. This growth has resulted in increasing pressure on terrestrial and aquatic ecosystem processes that support all natural resources in the region. Development and other alterations of sensitive areas such as shorelines have led to dramatic losses of habitats and species declines. The most recent indicators of impacts to marine resources include the Endangered Species Act (ESA) listings of Puget Sound chinook salmon, Hood Canal summer chum salmon, bull trout, and petitions to list Orca whales in the marine waters of the San Juan Islands and Puget Sound. These ESA listings have led to increasing efforts in the development of watershed and salmon recovery plans. The marine environment has only recently been recognized as a part of individual watersheds and historical efforts to protect salmonids have primarily focused on the freshwater, reproductive and rearing phases of salmon life history.

The San Juan Islands lie largely in the central portion of the Evolutionary Significant Units for Puget Sound anadromous salmonids including ESA listed chinook. Maps illustrating these ESUs can be found in Appendix C.

Most of what is contained in this report is a consolidation of previously reported information and taking an ecosystem approach in the assessment enabled us to summarize what we know about the nearshore ecosystem, identify data gaps, and draw important and meaningful conclusions and recommendations. However, many of the conclusions and recommendations found in this report have been reported previously.

(*map on page 8 omitted to save file space in this summary)*

EXECUTIVE SUMMARY

Many stocks of the wild salmonid populations in the Puget Sound ecoregion have declined. In March 1999, the National Marine Fisheries Service (NMFS) listed Puget Sound chinook salmon as a "Threatened" species under the Endangered Species Act (ESA). In November 1999, the U.S. Fish and Wildlife Service (USFWS) listed bull trout as a "Threatened" species under the ESA.

The San Juan Islands includes in excess of 85 identified freshwater streams. Williams (1975) identified approximately 100 miles of stream habitat in the Islands but did not address accessibility issues for anadromous salmonids. The WDNR hydrolayer identifies a minimum of 83 streams on Orcas Island, 64 on San Juan Island, 20 on Lopez Island, 18 on Shaw Island, and 6 on Blakely Island with an estimated total 158 miles. Only a few of these streams are naturally accessible to anadromous salmonids as the vast majority enter the marine environment from points that are naturally perched or enter at a gradient too steep for anadromous salmonid access. There are no known naturally sustaining populations of anadromous or resident salmonids in the freshwater habitats of WRIA 2.

The Habitat Limiting Factors Report

As a first step in the long-term commitment to salmonid recovery in Water Resource Inventory Area 2 (WRIA 2), representatives from the Washington Conservation Commission and the WRIA 2 Technical Committee worked together to develop this Habitat Limiting Factors Report. The purpose of this report is to provide a current "snapshot in time" of the existing salmonid species and habitat conditions that limit the natural production of salmonids in the San Juan Islands. This area is collectively termed WRIA 2 for the purposes of this report.

This report:

- Provides a summary of what is known about current and past salmonid species and habitat conditions in the WRIA for future reference;
- Provides baseline information for the WRIA (based on currently available data) for use in the implementation of an adaptive management program;
- Identifies limiting habitat factors in the WRIA, key findings, and associated data gaps; and
- Provides guidance for policy makers to determine next steps and direct resources for the recovery process.

Focus on Limiting Habitat Factors

While the causes of declining salmonid populations can be attributed to many factors, this report focuses on human-controlled modification or destruction of saltwater nearshore habitats and the changes to ecological processes that effect those habitats in WRIA 2. This approach was selected because of the geographic location of the San Juan Islands and their

importance as a nursery ground for juvenile and sub-adult salmonids on their migration routes from their natal streams to the Pacific Ocean and their return.

The nearshore marine habitats in WRIA 2 are diverse and include marine riparian vegetation, banks and bluffs, beach and backshore, tidal marshes, tidal flats, eelgrass meadows, kelp forests, and water column habitats. These habitats act together to create the productive marine ecosystem of the San Juan Islands by providing the physical, chemical and biological processes that form habitats and drive critical functions.
Historic maps of nearshore marine and estuarine habitats are lacking in WRIA 2 and only recently have comprehensive mapping efforts (WDNR Washington State ShoreZone Inventory) been undertaken that attempt to adequately assess the region's nearshore marine resources. Overwater structures, shoreline armoring, climate change, resource exploitation, contamination, have all contributed to losses of habitat area and their functions in the region. There is no comprehensive understanding of the effects of multiple stressors on the viability of nearshore marine habitats in the region.

Value of the San Juan Islands (WRIA 2) to Salmonids

There are no known naturally reproducing salmonid populations and/or stocks in the San Juan Islands. The value of the San Juan Islands is the diverse nearshore habitats that serve as nursery grounds to migrating juvenile salmonids from other watersheds and in their production of forage fish utilized by sub-adult and adult salmon on return migrations.

Forage fish found within or expected in the nearshore marine habitats of WRIA 2 include herring, surf smelt, and Pacific sand lance. Within WRIA 2, there are numerous known herring spawning areas and a number of documented surf smelt and Pacific sand lance spawning beaches. Continuing studies are documenting additional forage fish spawning areas.